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Study of the characteristics of bitumen with adhesive additive using method of X-ray analysis

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Abstract

© SGEM 2017. All Rights Reserved. The most appropriate way to increase grip of bitumen with mineral materials is the use of adhesive additives which are slowing down the process of aging of bitumen due to oxidation and increasing durability of pavement. Adhesive properties of bitumen are important characteristics, as they are having a huge impact on operational properties of composite materials, such as asphalt mixtures. To understand the chemical behavior of the binder components interaction and improve adhesion to mineral components of asphalt concrete mixtures, it is important to study the nature of interaction of road bitumen adhesion with additives. Experimental data are presented in this article shows difference of the diffraction maximums of bitumen samples after mixing with adhesive additive using radiographic method of analysis. The results showed that all samples of modified binders, except bitumen modified with 1% of the mass. additive (which nevertheless shows decline of intensity), missing diffraction maximum, which is specific to additive «Adgezolin» (2θ = 19.6°). Interplanar spaces are also reduced. This allows for the conclusion that during mixing additive “Adgezolin” with the bitumen we have not just physical adsorption, but also a chemical interaction, leading to changing the structure of the binder.

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Keywords

Adhesion additive, Road bitumen, X-ray analysis method

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